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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,985	10/28/2003	Seok-jin Lee	1572.1223	3974

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EXAMINER

FRANTZ, JESSICA L

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

80

<b>Office Action Summary</b>	<b>Application No.</b> 10/693,985	<b>Applicant(s)</b> LEE, SEOK-JIN	
	<b>Examiner</b> Jessica L. Frantz	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/28/03, 4/27/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because in the third line the phrase "a projection projecting from on one of the" should be changed to "a projection projecting from one of the." Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 9-15, 17 and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Akazawa et al. (4,706,470). Please refer to the accompanying figure of Akazawa et al. to more fully understand the following rejection. Akazawa et al. discloses a linear compressor (500) comprising a casing (2); a driving unit (16, 11) provided within the casing; a compressing unit (7, 8, 18) driven by the driving unit, compressing refrigerant; a supporting spring (5) elastically supporting the compressing unit; a projection (Please see accompanying picture) projecting from one of the compressing unit and a ceiling part of the casing; and a stopper (Please see accompanying picture) provided in a remaining one thereof, movably accommodating the projection within a predetermined movable range. Furthermore, the linear compressing unit includes a cylinder block (8) provided within the casing, forming a compressing chamber (See Figure 1); a piston (18) installed to reciprocate within the

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compressing chamber; a movable unit (17) connected to the piston, reciprocating together with the piston; and a vibrating member (4) disposed over the movable unit, increasing a reciprocating motion of the piston and the movable unit. Furthermore, the compressor includes a supporting member (Please see accompanying picture) combined with a top of the vibrating member, wherein the projection projects toward an inner ceiling part of the casing from a top of the supporting member and the stopper is provided in the inner ceiling part of the casing to accommodate the projection. Also, as the applicant's disclosure currently stands, there is no reference frame for what constitutes the "top" of the vibrating member and can therefore be chosen as any portion of the vibrating member.

In regards to claim 5, as discussed above, Akazawa et al. discloses the supporting member comprises: a combining part (7b) combined with the top of the vibrating member, radially extending downward from a center of the supporting member.

In regards to claims 9-10, as discussed above, Akazawa et al. discloses the projection and the stopper have a common shape and that shape is cylindrical. (Please see accompanying picture).

In regards to claim 11, Akazawa et al. as discussed above discloses a linear compressor with a compressing unit disposed therein to compress refrigerant, and a supporting spring elastically supporting the compressing unit comprising: a projection; and a stopper, the projection and the stopper having corresponding structures, each of the projection and stopper being attached to a respective one of the compressing unit

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and a ceiling part of the casing such that the compressing unit is prevented from moving outside a predetermined moveable range.

In regards to claim 12, Akazawa et al. as discussed above discloses a linear compressor having a casing with a compressing unit disposed therein to compress refrigerant, and a supporting spring elastically supporting the compressing unit, comprising: a collision prevention unit (See accompanying figure) to prevent a collision between the compressing unit and an inner wall of the casing by limiting a movement of the compressing unit from moving outside of a predetermined movable range toward an inner wall of the casing.

In regards to claims 13-15, Akazawa et al. as discussed above discloses a linear compressor, comprising: a casing; a compressing unit disposed within the casing to compress refrigerant; a supporting spring moveably supporting the compressing unit; a projection projecting from one of the compressing unit and a ceiling part of the casing; and a stopper provided in a remaining one of the compressing unit and a ceiling part of the casing to movably accommodate the projection within a predetermined movable range. Furthermore, that the compressing unit comprises: a cylinder block to form a compressing chamber; a piston installed to reciprocate within the compressing chamber; and a movable unit connected to the piston to reciprocate together with the piston. Also, Akazawa discloses a vibrating member disposed adjacent to the movable unit to increase a reciprocating motion of the piston and the movable unit; and a supporting member combined with a top of the vibrating member, wherein the projection projects toward an inner ceiling part of the casing from a top of the

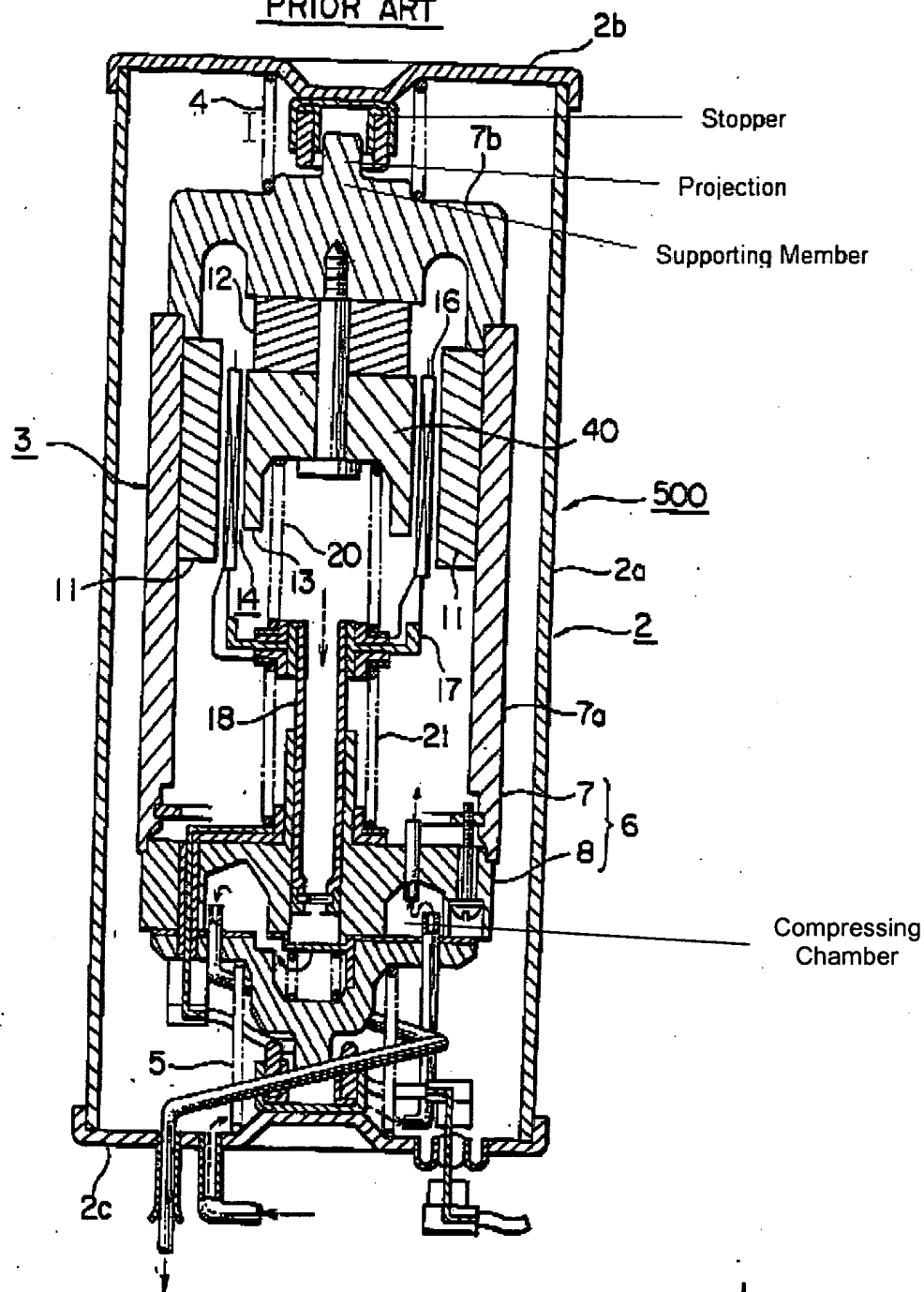
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supporting member and the stopper is provided at the inner ceiling part of the casing to accommodate the projection.

In regards to claim 17, Akazawa et al. as discussed above discloses the supporting member comprises: one or more combining parts (7b) coupled with the top of the vibrating member, radially extending downward from a center of the supporting member.

In regards to claims 21-22, Akazawa et al. as discussed above discloses that the projection and the stopper have a common shape and that shape is cylindrical. (Please refer to the accompanying figure).

**FIG. 1**  
**PRIOR ART**



***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 6-8, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akazawa et al. (4,706,470) in view of Hur et al. (JP 2001073943 A). For translation purposes only, please refer to Hur et al. (6,398,523 B1). Akazawa et al. (4,706,470) as applied immediately above, substantially teaches all the limitations of the claims but fails to teach the projection projects toward the supporting member from an inner ceiling part of the casing and the stopper is provided on a top of the supporting member to accommodate the projection. In regards to claim 6 dependent on claim 4, directed to embodiment 2, they also fail to teach that the supporting member comprises: a combining part combined with the top of the vibrating member, radially extending downward from a center of the supporting member when the supporting member is combined with a top of the vibrating member and the projection projects toward the supporting member combined with a top of the vibrating member from an inner ceiling part of the casing and the stopper is provided on the top of the supporting member to accommodate the projection. In regards to claim 7, directed to embodiment 1, they further fail to teach the projection comprises: an opening formed therein along a vertical direction. And in regards to claim 8, directed to embodiment 2, they further fail to teach the projection comprises: an opening formed therein along a vertical direction. Hur et



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al. discloses, in regards to claim 4, which is directed to embodiment 2, the projection (360) projects toward the supporting member (300) from an inner ceiling part of the casing and the stopper (Please see figure 10, cylindrical piece attached to supporting member (300)) is provided on a top of the supporting member to accommodate the projection for the purpose guiding flow. In regards to claim 6 which is dependent on claim 4, directed to embodiment 2, the combining part limitations are anticipated by Akazawa et al. as discussed in claim 5, and the location of the projection and stopper are disclosed by Hur et al. as discussed in the immediately preceding rejection of claim 4. In regards to claim 7 and 8, Hur et al. discloses the projection (360) comprises an opening formed therein along a vertical direction for the purpose of guiding flow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the linear compressor of Akazawa et al. with the supporting member combined with a top of the vibrating member wherein the projection projects towards the supporting member from an inner ceiling part of the casing and the stopper is provided on a top of the supporting member to accommodate the projection for the purpose of guiding flow and that the projection comprises an opening formed therein along a vertical direction for the purpose of guiding flow.

5. In regards to claim 16, Akazawa et al. fails to discuss that the projection from an inner ceiling part of the casing and the stopper is provided at a top of the supporting member to accommodate the projection. Hur et al. discloses this as discussed above in the rejection of claim 4, for the purpose of guiding the flow. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have

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provided the linear compressor of Akazawa et al. with the respective locations of the stopper and projection of Hur et al. in order to better guide the flow.

6. In regards to claim 18, which is dependent off claim 16 directed to embodiment 2, the combining part limitations are anticipated by Akazawa et al. as discussed in regards to claim 5. However, Akazawa fails to disclose the limitations on the locations of the stopper and the projection but these locations are disclosed by Hur et al. for the purpose of guiding the flow as discussed in preceding rejection of claim 4. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the linear compressor of Akazawa et al. with the specified locations of the stopper and the projection for the purpose of guiding the flow.

7. In regards to claims 19-20, again as discussed above, Akazawa et al. fails to teach that the projection comprises an opening formed therein along a vertical direction. Hur et al. discloses the projection (360) comprises an opening formed therein along a vertical direction for the purpose of guiding flow. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the linear compressor of Akazawa et al. with an opening formed in the projection along a vertical direction for the purpose of guiding flow..

8. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akazawa et al. (4,706,470) in view of Hur et al. (JP 2001073943 A) and further in view of applicant's admitted prior art. For translation purposes only, please refer to Hur et al. (6,398,523 B1). Both Akazawa et al. and Hur et al. fail to disclose that the linear compressor further comprises a stationary shaft passing through the opening when

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engaging the moveable unit and the vibrating member to facilitate and engagement operation. The applicant's admitted prior art discloses a shaft (59) capable of passing through the opening when engaging the moveable unit and the vibrating member for the purpose of facilitating an engagement operation. Therefore, it would have been obvious at the time of the invention to have provided the combined invention of Akazawa et al. and Hur et al. with the stationary shaft of the applicant's admitted prior art for the purpose of facilitating an engagement operation.

9. Claims 1-3, 5, 9-15, 17, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Akazawa et al. (4,706,470). The applicants admitted prior art teaches a linear compressor comprising a casing (105) a driving unit (131) provided within the casing, a compressing unit (111) driven by the driving unit, compressing refrigerant, a supporting spring (108) elastically supporting the compressing unit, a cylinder block (115) provided within the casing forming a compressing chamber (113), a piston (121) installed to reciprocate within the compressing chamber, a moveable unit (151) connected to the piston reciprocating together with the piston, and a vibrating member (153) disposed over the moveable unit increasing a reciprocating motion of the piston and the moveable unit and a stationary shaft (59). The admitted prior art fails to teach however, a projection projecting from one of the compressing unit and a ceiling part of the casing and a stopper provided in a remaining one thereof, moveably accommodating the projection within a predetermined moveable range. It further fails to teach a supporting member combined with a top of the vibrating member wherein the projection projects toward an inner ceiling part of the

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casing from a top of the supporting member and the stopper is provided in the inner ceiling part of the casing to accommodate the projection. It also fails to teach a combining part combined with the top of the vibrating member radially extending downward from a center of the supporting member or that the projection and stopper have a common cylindrical shape. It also fails to teach a collision prevention unit. Akazawa et al as discussed above substantially teaches the invention as claimed including a projection (Please see accompanying picture) projecting from one of the compressing unit and a ceiling part of the casing; and a stopper (Please see accompanying picture) provided in a remaining one thereof for the purpose of movably accommodating the projection within a predetermined movable range. Akazawa et al. also teaches a supporting member (Please see accompanying picture) combined with a top of the vibrating member, wherein the projection projects toward an inner ceiling part of the casing from a top of the supporting member and the stopper is provided in the inner ceiling part of the casing to accommodate the projection. Also, Akazawa et al. discloses the supporting member comprises: a combining part (7b) combined with the top of the vibrating member, radially extending downward from a center of the supporting member for the purpose of combining the vibrating spring with the support member.

10. Akazawa et al. further discloses that the stopper and the projection have a common cylindrical shape as shown in the accompanying figure and that the projection and the stopper constitute a collision prevention unit. Akazawa et al. further teaches (as shown in the accompanying figure) the projection projects towards an inner ceiling part

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of the casing from a top of the supporting member and the stopper is provided at the inner ceiling part of the casing for the purpose of accommodating the projection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the linear compressor of the applicant's admitted prior art with the support structure, projection, stopper and combining parts of Akazawa et al. for the purpose of preventing a collision between the compressing unit and the inner walls of the casing which would decrease efficiency.

11. Claims 4, 6-8, 16, 18-20, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Akazawa et al. (4,706,470) and further in view of Hur et al. (JP 2001073943 A). For translation purposes only, please refer to Hur et al. (6,398,523 B1). The combined linear compressor of applicant's admitted prior art and Akazawa et al. substantially teaches the limitation as discussed above but fails to teach the projection projects towards the supporting member from an inner ceiling part of the casing and the stopper is provided on a top of the supporting member to accommodate the projection. While they do teach the limitations of the combining parts, they fail to teach the projection comprises an opening formed therein along a vertical direction or that the stationary shaft passes through the opening of the projection to facilitate an engagement operation. Hur et al. is discussed above and teaches the projection (360) projects toward the supporting member (300) from an inner ceiling part of the casing and the stopper (Please see figure 10, cylindrical piece attached to supporting member (300)) is provided on a top of the supporting member to accommodate the projection for the purpose guiding flow. Also, Hur et al.

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discloses the projection (360) comprises an opening formed therein along a vertical direction for the purpose of guiding flow. And with the combined shaft of the applicant's admitted prior and the opening formed in the projection of Hur et al. the combined linear compressor is capable of having the stationary shaft pass through the opening to facilitate an engagement operation. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to have modified the combined invention of the applicant's admitted prior art and Akazawa et al. with the projection and stopper structure of Hur et al. for the purpose guiding flow.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references substantially teach the invention as claimed:

- Kottke (6,203,288)
- Tojo et al. (6,231,310)
- Kawakami et al. (4,632,645)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica L. Frantz whose telephone number is 571-272-5822. The examiner can normally be reached on Monday through Friday 8:30a.m.-5:00p.m. E.S.T..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe can be reached on (571)272-4444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JF

JF

  
**ANTHONY D. STASHICK**  
**PRIMARY EXAMINER**